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REGENERATION
Special Studies

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STUDY PLAN FOR TESTING GIBBERELLIC ACID ON PONDEROSA PINE

PURPOSE

Gibberellic acid is a growth stimulator which has promise of practical application on many plant species. The purpose of the present study is to test its effect on ponderosa pine seedlings and small saplings. Seedlings of ponderosa pine are relatively slow growers. Gibberellic acid may prove beneficial in producing larger seedlings during the nursery stage. The use of the acid on small saplings primarily will be to test its effect on flower and cone production, with the hope that earlier than normal flowering can be induced. Shoot growth of saplings will also be measured.

METHOD

The seedling phase will be conducted in the lath house at the Boise Basin Experimental Forest where new seedlings, grown from seeds planted in April 1957, will be treated. The seedlings are growing in planting tubes, approximately 25 to a box. Four boxes will be selected and the following treatments randomly assigned:

1. Control
2. Sprayed with a 10 ppm solution of gibberellic acid.
3. Sprayed with a 100 ppm solution of gibberellic acid.
4. Sprayed with a 1,000 ppm solution of gibberellic acid.

The acid will be applied with small atomizers. The treatments will be replicated twice to make a total of 8 boxes of seedlings in the test.

The small sapling phase will be conducted on an area near the headquarters of the Boise Basin Experimental Forest. Four trees as nearly similar as possible will be chosen. They will be numbered with aluminum tags and assigned at random to receive the following treatments:

1. Control.
2. Sprayed with a 10 ppm solution of gibberellic acid.
3. Sprayed with a 100 ppm solution of gibberellic acid.
4. Sprayed with a 1,000 ppm solution of gibberellic acid.

The test will be replicated 5 times, making a total of 20 trees.

Only the new 1957 growth on the upper crowns will be sprayed. Spraying will be repeated ten days after the first application. It is expected that spraying of the saplings will also be repeated annually for two or three years. Flower production, if any, may take several years to be effected.

ANALYSIS

At the time of spraying, no height measurements will be needed on the seedlings because of their uniformity. At the end of the first growing season the seedlings will be measured and their average heights per box analysed as follows:

Source of Variation	DF
Replications	1
Treatments	3
Error	3
Total	7

At the time of spraying the saplings, new growth of all treated twigs will be measured and averaged for the tree. End of season measurements will then be made and the lengths analysed by the method of co-variance, where an adjustment for different starting lengths can be included.

Flower production, if and when it occurs, will be analysed by count in a manner similar to seedling heights.

EQUIPMENT AND SCHEDULE

The following equipment and supplies will be needed:

1. Gibberellic acid solution in three concentrations.
2. Three atomizers.
3. Aluminum tags.

Marvin W. Foiles and Donald W. Lynch will be responsible for this study. It will be initiated in June, 1957, and continue through 1959.

Respectfully submitted,

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